

NON-PUBLIC?: N  
ACCESSION #: 8810060266  
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Braidwood Unit 2 PAGE: 1 of 3

DOCKET NUMBER: 05000457

TITLE: Manual Reactor Trip Due to Approaching Low Low Steam Generator Levels as  
a results of Failed Open Heater  
EVENT DATE: 09/04/88 LER #: 88-020-00 REPORT DATE: 09/08/88

OPERATING MODE: 1 POWER LEVEL: 081

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR  
SECTION  
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:

NAME: Cheryl A. Melone Tech Staff Engineer TELEPHONE: 815-458-2801  
Ext 2400

COMPONENT FAILURE DESCRIPTION:

CAUSE: SYSTEM: COMPONENT: MANUFACTURER:  
REPORTABLE TO NPRDS:

SUPPLEMENTAL REPORT EXPECTED: No

ABSTRACT: The Moisture Separator Reheater (KSR) first stage Reheater Drain Tank normal drain valve was out of service, with the emergency drain valve maintaining level. Approximately 0238, an increase in stem/feedwater flow, and reactor power was observed. Turbine power was manually reduced. The condensate pump suction strainers started to plug. At 0253, the reactor was manually tripped due to decreasing 20 steam generator level. This cause was a failure of the emergency drain valve which routed extraction steam into the win condenser, discharging internal scaling into the condensate pump suction strainers. The immediate corrective action was to recover steam generator levels and establish stable conditions. The controller for emergency drain valve was checked, no problems found; the valve was exercised manually several times. No apparent reason for the valve sticking could be identified. The valve was left in an operable status. There have been two previous occurrences of a reactor trip as a result of heater drain system perturbations, corrective actions were implemented. The root cause of this event is different. Previous corrective actions are not applicable to this event.

( END OF ABSTRACT )

TEXT PAGE 2 OF 3

A. PLANT CONDITIONS PRIOR TO EVENT:

unit: Braidwood 2 Event Date: September 4, 1988 Event Time: 0253

Reactor Node: I Mode Maw: Power Operation Power Level: 81%

RCS (AB! Temperature/Pressure: NOT/NOP

B. DESCRIPTION OF EVENT:

The A, B and C Condensate/Condensate Booster Pumps (CO/CB) (SD), the B and C Heater Drain Pumps (SI) and the B and C Feedwater Pumps SJ! were operating. The D CD/CB pump was out-of-service (OOS) for suction strainer cleaning but did not contribute to the severity of the event.

Prior to the reactor trip the Moisture Separator Reheater (MSR) first stage Reheater Drain Tank (SN), 2HD03TC, normal drain valve, 2HDO02C, was OOS for repair and the drain tank was maintaining level with the emergency drain valve. The emergency drain valve routes flow to the Main Condenser SG!. The normal drain valve routes flow to the 25A feedwater heater.

At approximately 0238, an increase in steam flow and feedwater flow and a subsequent increase in reactor power was observed. Turbine power was verified to be stable with a stable generator output. A secondary steam leak was suspected and operators were dispatched to investigate. With no apparent external leakage present, turbine power was manually reduced. Due to the increased steam flow within the secondary side, the condensate pump suction strainers started to plug resulting in a reduction in feedwater flow to the stems generators SB!. The rate of power reduction was increased because all four steam generators levels SJ! were decreasing.

At 0253, the reactor was manually tripped due to the 2D steam generator level continuing to decrease and approaching the low low steam generator level trip setpoint of 17%.

The Auxiliary Feedwater (BA! pumps automatically started to maintain steam generator levels as designed.

Operator actions decreased the severity of this event since the reactor was manually tripped prior to any Engineered Safety Feature (ESF) (IG) actuation.

The appropriate NRC notification via the ENS phone system was made at 0630 on September 4, 1988, pursuant to 10CFR50.72(b)(2)(ii).

This event is being reported pursuant to IOCFR50.73(a)(2)(iv) - Any event or condition that resulted in manual or automatic actuation of any engineered safety feature, including the reactor protection system.

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#### C. CAUSE OF EVENT:

The cause of this event is attributed to a failure of the NSR first stage reheater drain tank emergency drain valve, 2HDO32C. Since the normal drain valve for this tank was OOS for repair, the emergency drain valve was used to maintain normal drain tank level.

When the emergency drain valve stuck open it caused the fourth stage extraction steam which goes to the first stage reheater the MSR to be routed through the first stage reheater drain tank into the main condenser. Normal system configuration directs the fourth stage turbine extraction steam to the first stage MSR reheater tank which subsequently drains to the 25 heaters.

Since the fourth stage turbine extraction steam was routed directly to the main condenser, this caused the total steam flow to increase. Since this high pressure steam flow was passing through a drain tank which normally receives drainage, it is thought that this steam flow caused internal scaling to be discharged within the "in condenser and thus caused the condensate pump suction strainers to plug. This caused a reduction in feedwater flow to the steam generators.

#### D. SAFETY ANALYSIS:

There was no affect on plant or public safety as all engineered safety features operated as designed.

Under worst case conditions of the plant operating at 100% power with a design basis loss of feedwater, there would be no impact on the safety of the plant or public as this is enveloped by the Final Safety Analysis Report (FSAR). The Auxiliary Feedwater System was operable throughout the event.

#### E. CORRECTIVE ACTIONS:

The immediate corrective action was to recover the steam generator levels and establish stable conditions.

The controller for emergency drain valve 2HDO32C was checked and there were no problems found. Valve 2ND032C was exercised manually several times. No apparent reason for the valve sticking could be identified. The valve was left

in an operable status.

F. PREVIOUS OCCURRENCES:

There has been one previous occurrence of a reactor trip as a result of heater drain system perturbations. The corrective actions were implemented addressing both root and contributing causes. However, the root cause of this event is different in that no valve mispositioning was involved. Previous corrective actions are not applicable to this event.

G. COMPONENT FAILURE DATA:

Manufacturer Nomenclature Model Number MFG Part Number

Masonneillan Camflex II 3" - 35002 Series N/A

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Commonwealth Edison  
Braidwood Nuclear Power Station  
Route #1, Box 84  
Braceville, Illinois 60407  
Telephone 815/458-2801

B W/88-1149

September 21, 1988

U. S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, D.C. 20555

Dear Sir:

The enclosed Licensee Event Report from Braidwood Generating Station is being transmitted to you in accordance with the requirements of IOCFR50.73(a)(2) (iv) which requires a 30 day written report.

This report is number 88-020-00; Docket No. 50-457.

Very truly yours,

R.E. Querio  
Station Manager  
Braidwood Nuclear Station

REQ/AJS/jab  
(7126z)

Enclosure: Licensee Event Report No. 88-020-00

cc: NRC Region M Administrator  
NRC Resident Inspector  
INPO Record Center  
CECo Distribution List

ACCESSION #: 8810060268

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